

INVESTIGATIONS AT ROCK SHELTER N93/5 WAIHORA BAY, TAUPO, NEW ZEALAND

T. HOSKING* AND A. LEAHY**

*TAUPO **AUCKLAND

Abstract. Excavations in a small rock shelter at Waihora Bay, Taupo, in 1956, established four occupation layers. Artefacts included adzes, stone flakes, pumice bowls and net floats, bone tools and broken combs.

Comparison with material from the site at Whakamoenga Cave, some 20 km to the east, shows similarities between the occupation 2 period at Whakamoenga and that of the rock shelter, suggesting a date of between the seventeenth and late eighteenth century.

During a trip to the Western Bay area of Lake Taupo in December, 1956, Trevor Hosking visited a rock shelter at the eastern end of Waihora Bay (Figs. 1, 2). The site consists of a small rock overhang approximately 100 metres from the beach along the cliff which forms the eastern end of the bay. The surface of the shelter is three metres above the present lake level and is protected by the overhang. The floor was found to be dry and covered with *ca.* 5 cm of firm pumice dust.

A search of the pumice floor produced several artefacts partially covered with dust and, because of this, the site was further investigated. The layers were removed one by one and, when well-preserved or interesting artefacts were discovered, notes were made. Items such as stone and obsidian flakes were not recorded individually but gathered in one collection and their presence noted in the site. Records of the excavation, together with some of the cultural material, were sent to Dr. Gilbert Archey at the Auckland Institute and Museum. The remainder of the artefacts were retained by Hosking.

This report describes the investigation and the material recovered from the shelter. The results are compared with those from the excavation of the larger Whakamoenga Cave, N94/7, (Leahy 1976) some twenty kilometres to the east of Waihora Bay.

Items held by the Auckland Museum are referred to by their numbers in the Archaeology Department catalogue (A.R. numbers). Other items are noted by their Hosking artefact collection number.

Geology

Waihora Bay is south of the active fault associated with the Whangamata, Whakaipo and Tapuae-haruru peninsulas (for a more detailed description of the general area see the report on Whakamoenga Cave by Leahy 1976). The bay has a shingle beach and a stream which, at present, flows into the lake at the eastern end. This stream cuts its way down through the eroded pumice plain behind and to the north of the bay. The sides of the bay are bordered by high ignimbrite cliffs which once formed part of the Western Bay caldera

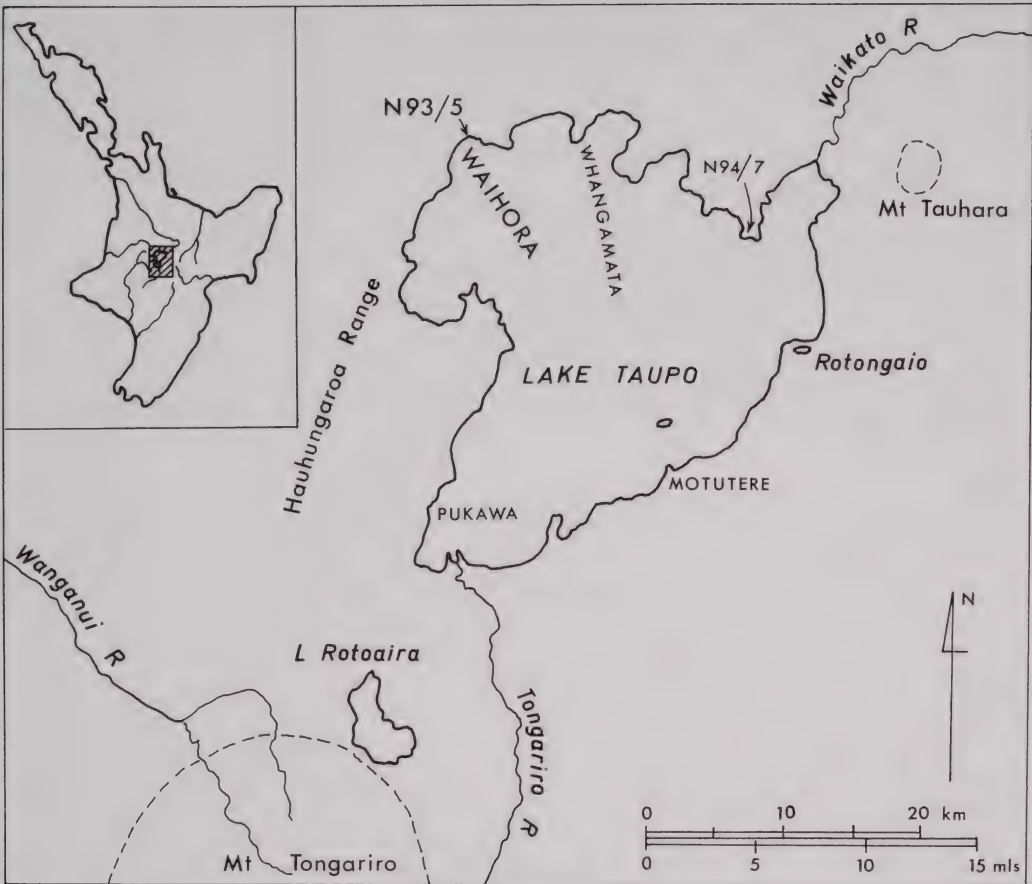


Fig. 1. Map of Lake Taupo area.

after a collapse following an eruption of magma. The rock shelter may have been formed by the undercutting of the cliff when the lake level was once higher. To the east of the overhang is a steep narrow gully with a dry watercourse which curves around the front of the shelter (Fig. 3). Protecting the site from the southern aspect of the lake is an irregular tumble of large rocks deposited in front of the shelter by the collapse of part of the roof after the lake receded.

Site Description

The site consists of a flat floor with a concave rear wall curving up to the high overhanging roof (Fig. 4). The back of the shelter is slightly undercut and contains three small recesses, a western, a central and an eastern one (Fig. 5). The floor is approximately 7 m at its widest point and 15 m long. The dry watercourse, which lies along the front of the shelter, and divides the flat floor from the rock pile and the lake, is *ca.* 40 cm deep and 1 m wide. At present there are a few scattered trees growing amongst the rocks.

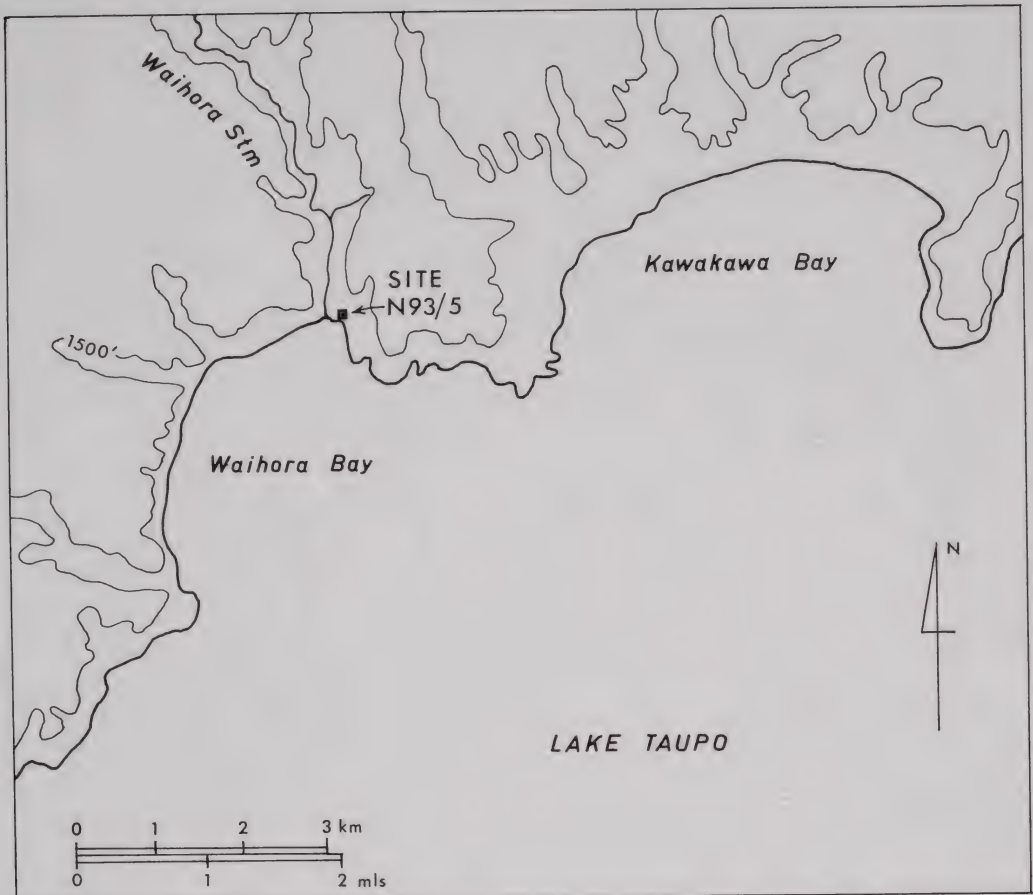


Fig. 2. Map of Rock shelter site N93/5 and surroundings.

STRATIGRAPHY AND OCCUPATION SEQUENCE

The stratigraphy consisted of five upper layers all containing cultural material, except for layer 2, and three deeper, water-deposited sterile layers (Fig. 6). The occupation layers went to a depth of *ca.* 38 cm and the sterile layers continued down for another 35 cm to the ignimbrite rock floor.

Obsidian, stone flakes and gourd pieces are recorded as being found in all layers except sterile layer 2.

The top layer, layer 5, was composed of *ca.* 5 cm of firm rhyolite dust formed by weathering of the overhang and wind-blown debris deposited naturally on top of layer 4. Cultural material occurred within it. Amongst the objects found were broken combs and a cut lock of hair as well as bone toggles, woven material, gourds, lake and marine shells, pumice artefacts, obsidian and chipped stone. The shelter may also have been used during this period for the deposition or drying out of bodies, which were subsequently removed, or as a repository for tapu items.

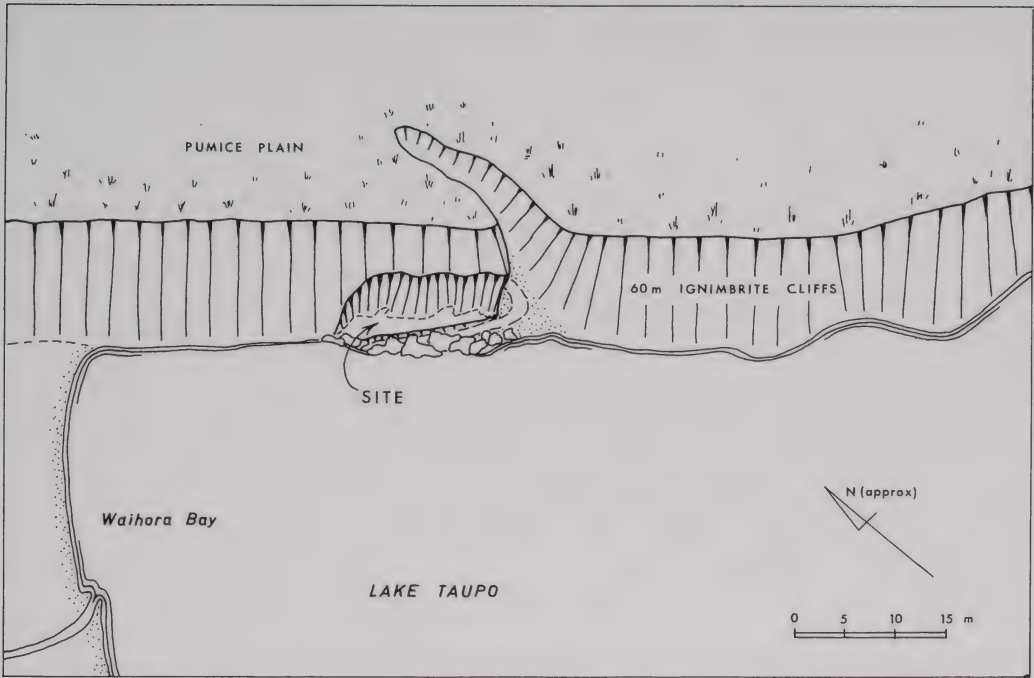


Fig. 3. Sketch of site N93/5 (after Hosking's original drawing).

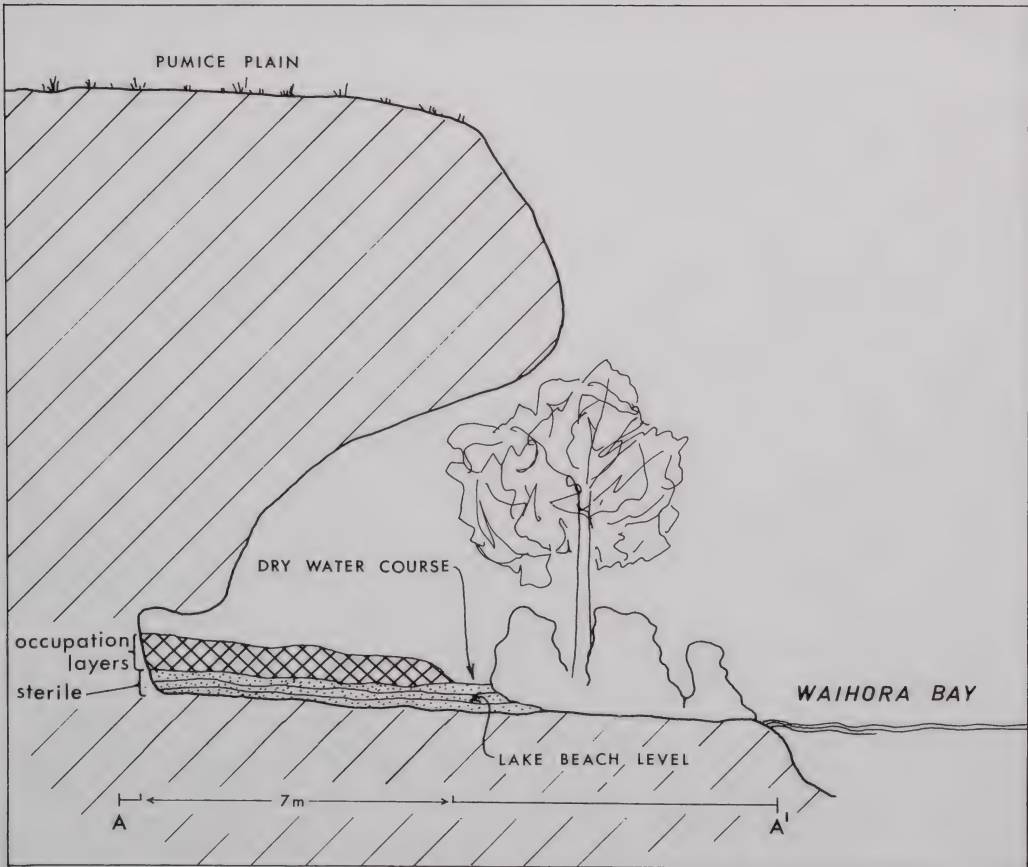


Fig. 4. Cross-section of N93/5 (after Hosking's original drawing).

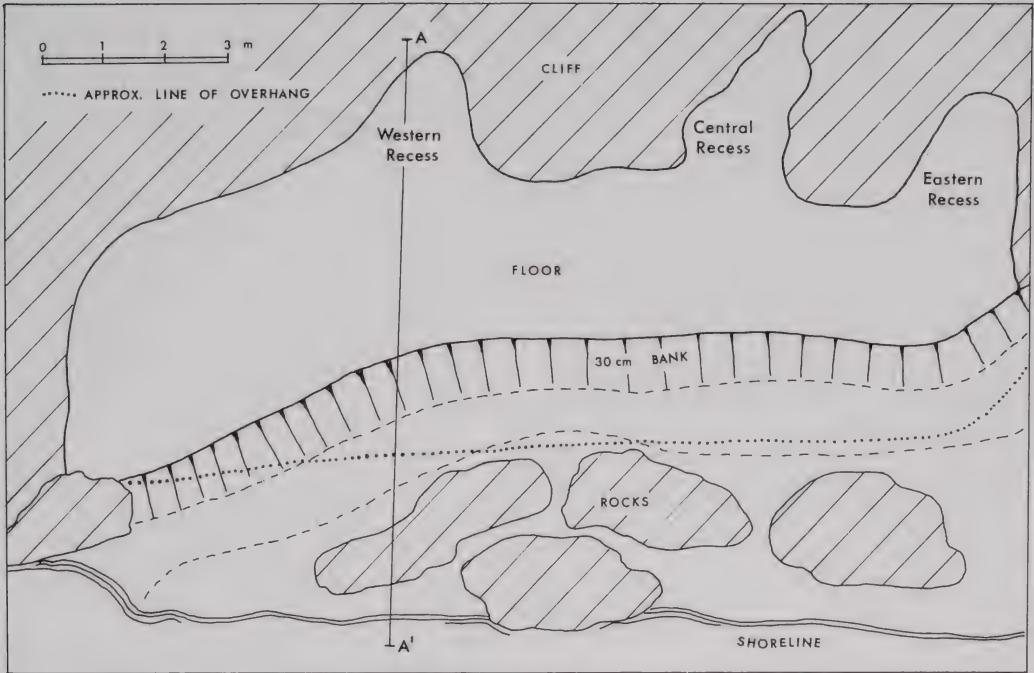


Fig. 5. Rock shelter floor plan (after Hosking's original drawing).

Layer 4, below the surface dust, was *ca.* 15 cm in depth, well compacted and contained an accumulation of charcoal, obsidian and stone flakes, broken gourds, shells and most of the faunal remains. Animals represented were dog, rat and bird. In the central recess was a carefully placed collection of dog jaw bones and teeth together with dog vertebrae (some charred) and bird and rat bone mixed with charcoal. In the eastern recess a large number of hangi stones were stacked. A small adze and an adze roughout formed from an elongated natural stone were also found.

Layer 3 was a 5 cm layer of black material with a highly compacted surface. It had the appearance of having been burnt and fires lit upon it. Nothing specific was noted from this layer (most items are recorded as coming from the two upper layers, 5 and 4). From a sketch of the floor plan it is possible that bird and rat bone came from layer 3 but some of these small animal bones may have been deposited by birds of prey, such as moreporks, or as the result of natural causes.

Layer 2 was a firm yellow rhyolite dust layer, 2.5 cm thick. It was sterile, containing no occupational material.

Layer 1 consisted of 5 cm of compacted black earth mixed with wood ash. Within this layer, at a depth of *ca.* 30 cm below the surface, a large adze was found.

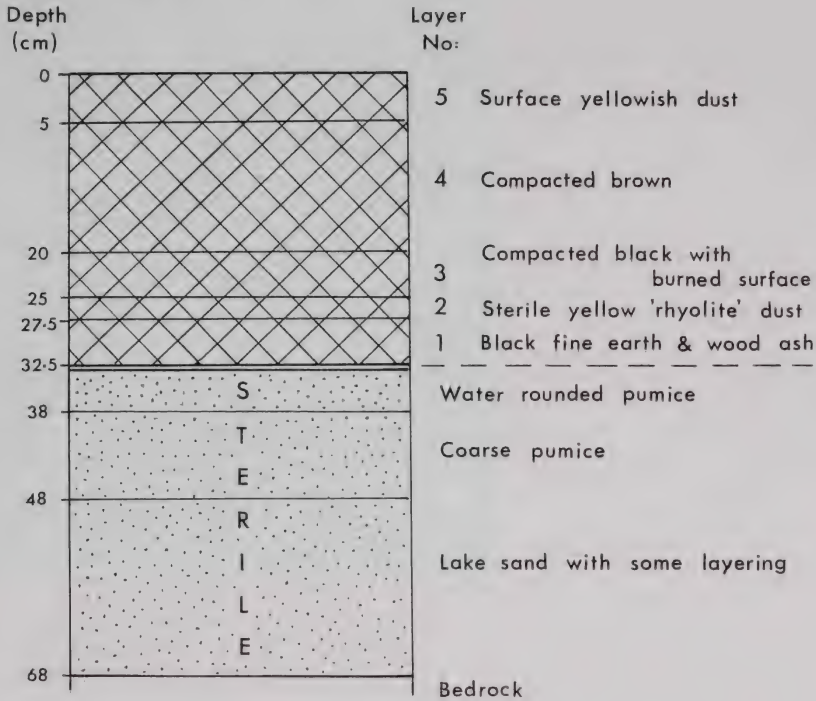


Fig. 6. Schematic representation of layers, N93/5.

Beneath these cultural layers were three levels of sterile deposits consisting of a 5 cm layer of small water-rounded pumice rubble under layer 1, *ca.* 10 cm of coarse water-rolled pumice lumps beneath that and finally lake gravel and sand containing some water-deposited layering, resting on bedrock.

Bone and Shell

A few bones and bone fragments were found. Some had been fashioned into artefacts.

Although there were bone artefacts in layer 5 there was no evidence for midden refuse. Layer 4 produced a variety of skeletal material including the remains of at least three sub-adult dogs (*Canis familiaris*), rats (*Rattus exulans*) and birds. Many of these bones, including those of the dogs, were charred.

Some of the dog long bones were being worked in the shelter. A left radii had had the proximal end cut and then snapped off and one right radii had two nicks cut into the bone below the joint. One piece (Artefact 91) discussed later, is a small long bone with the articulating ends cut off. It could be from a sub-adult dog (I.W.G. Smith, pers.comm.).

The bird remains include some very fragile broken bones of a takahe (*Notornis mantelli*), assorted duck bones and a number of unidentified birds, many of them small (R.J. Scarlett, pers.comm.). Scarlett states that he has never seen remains of the takahe

associated with 'Classic Maori' material. The bird is known in the North Island only by sub-fossil evidence, though it may have survived until the nineteenth century (Falla et al. 1979:102). These takahe bones could have been naturally deposited but, as the shelter is rather isolated, access would be difficult for a flightless bird.

Bone artefacts include cut bone, awls, toggles and bone combs. A small broken piece of bone, A.R.6140, has been noted by Scarlett (pers. comm.) as possibly moa bone but it is too fragmentary to be sure. It has been artificially flattened on two surfaces, is rounded down one side, and measures 20x12 cm. It appears to have been charred.

A half section of the lower jaw of a tuatara (*Sphenodon punctatus*) and the jaw of a small lizard, possibly a gecko, came from the excavation. Tuatara remains were also found in Whakamoenga Cave, both in the early part of occupation 1 and in occupation 3.

Both freshwater and marine shells were present in layers 5 and 4. The few marine shells were probably imported as artefacts rather than food as none of the valves matched and most showed use wear of some kind.

Five broken left and two broken right valves of *Perna canaliculus* were found in layer 5. Also present in the site, but from no specified layer, were four valves of *Paphies* species. Three are *P. australis* (one right and two left valves) and the other a right valve of *P. (Mesodesma) subtriangulatum*.

One *Perna* valve and the *P. subtriangulatum* contain kokowai (red ochre) and one *P. australis* is thickly coated with it. All the *Paphies* species are heavily pressure flaked around the edges and had been used as scrapers.

In her study of wear damage of shells, Harsant (1978: 111) found that only one of the four *Paphies* valves from the Waihora rock shelter could be positively identified as a fern root scraper. Of the three remaining *Paphies* one was probably used in fern root scraping, another on a fibrous, woody medium and the type of material worked by the third shell is unknown. Harsant suggests that the *Perna* had most probably been used for flax or fibre preparation. A similar interpretation was advanced for *Perna* from Whakamoenga Cave (Leahy 1976: 53-54).

Ten non-matching valves of the freshwater mussel (*Hyridella menziesi*) were collected. Five of these shells are heavily coated with kokowai.

Both layers 5 and 4 contained shells but only *Perna* and *Hyridella* are specifically recorded as being present in layer 5. The *Paphies* could have come from either layer. Shells are not mentioned as being present in layers 3 and 1.

Botanical material

The botanical material in the site comprised worked wood, sticks, gourd fragments (*Lagenaria* sp.) and scraps of woven material.

Several pieces of wood show signs of working. One item, measuring 110x20 mm (A.R.6133B) has a series of fine cuts on the smooth surface where some sharp instrument, probably an obsidian flake, has been pressed along it. Another small flattened stick

measuring 170x35x5 mm (A.R.6145B) has a smooth central groove running down to where the wood ends in a charred cross-section. It could be the remains of a fire stick. A rather similar stick was found in Moa Bone Point Cave, Redcliffs, Canterbury (Trotter 1975: 210, Fig. 11). Artefact A.R.6133 is a carefully formed rectangular block of wood, 25x30 mm, smooth on the upper and lower surfaces and neatly chiselled or adzed along the edges.

Canoe travel is indicated by an oval shaped flat board (A.R.6146) with a curved base, broken across the narrow upper end and in a very fragile condition. It appears to be the blade of a small paddle and measures 250x110 mm. A rather similar flattened board may also be part of a paddle. These two wooden pieces do not seem to have been buried and so may have come from layer 5.

A piece of bracken stalk (*Pteridium aquilinum* var. *esculentum*) bent and bound with flax came from layer 5. A similar object was found in Whakamoenga Cave (Leahy 1976: 61). A split manuka twig with one kokowai covered end and a piece of cut totara bark with both sides covered with kokowai are not provenanced as to layers.

Remains of gourds were found in layers 5, 4, 3 and 1 with the greatest quantity coming from layers 5 and 4. At least two gourds are represented by their dried stalk ends which could indicate their use as cooked vegetables. There is similar evidence for the stalk end of gourds, as well as seeds, at Whakamoenga and raises the question of whether these plants could have been grown in the Taupo area in pre-European times or whether they were carried in whole from warmer areas. One large side portion of gourd (A.R.6124) is covered with red ochre on the outside and thickly encrusted on the inner concave portion. The paint, while wet, flowed over the broken edge suggesting that this piece had been a saucer-shaped container for holding or mixing kokowai. Two of the other gourd pieces are partially charred.

Several fragments of flax mats and a cloak were found. All the mat pieces are charred and no edges remain. Both diagonal and checkered weaves are represented, suggesting a minimum of two mats, at least, in use in the shelter. The small portion of charred cloak, found in layer 5, comes from the *kaupapa* or main cloak body. The warps number 8.5 to 9 per centimetre (21 warps per inch) and the wefts occur at 7 mm intervals (approximately 3 wefts per inch). The wefts are of double pair twining. Mead (1969: 52) suggests that body texture of cloaks may be gauged from the warps per inch and that a figure of 16.6w.p.i. represents a fairly coarse weave whereas the finest cloaks have a w.p.i. measure of 26 w.p.i.. On this basis the Waihora fragment would be classified as a fine 'K' type cloak and would be of much finer quality than any of the cloak remnants found in Whakamoenga Cave (Leahy 1976: 58).

Stone

There is no provenance for much of the stone and flake material. A pile of hangi stones had been placed at the back of the eastern recess and could have been associated with either layer 5 or 4, but most probably layer 4 because it also contained charcoal and faunal remains. Some stone pieces may have been the remains of exploded hangi material but a number are true flakes with bulbs of percussion. Few show obvious signs of use. Some pieces have kokowai adhering to them and a number of small lumps of prepared red ochre were found.

Several significant pieces of worked stone were present in addition to the adzes (described below) and flakes. A.R.6136B is a small oval pebble, flaked at either end and subsequently bruised and Artefact 80 is a wedge-shaped broken pebble, heavily bruised on its rounded surface. Both these are probably hammer stones. A.R.6132 is an oval kokowai-covered natural stone (11x7 cm) which has been bifacially flaked at both ends. Artefact 77 is similar but more adze-like, being bifacially flaked at one end only but with a few flakes struck from the butt end. It is rectangular in cross-section and measures 10x4.5 cm. A flake from the polished surface of an adze (A.R.6130) was also found.

Two flat unmodified pebbles, Artefacts 81 and 82, have one surface coated with kokowai, suggesting their use as grinders.

Three hundred and twenty-one obsidian flakes were found, nearly all unprovenanced. All the material is grey when held to the light except for a small 30 x 20 mm core-like piece of red obsidian, streaked with black (A.R.6137c). It shows use wear on at least two edges and was found in layer 5, as was a large grey-black banded obsidian flake knife (A.R. 6127B), 70 x 60 mm in size. It has secondary flaking on two sides and pressure flaking all round the edges.

The size of the obsidian flakes ranges from 10 to 70 mm and the total weight is 3126 gm. Smaller chips, if present, were not collected. Over 40% have some cortex evident. At least some of the obsidian was probably collected from the beaches and streams in nearby Whangamata Bay (Fig. 1). The smallish size of most flakes suggests natural pebble origin rather than quarried material (see Leahy 1976:65).

Several obsidian pieces have kokowai on their surfaces and, as a number of items known to be from layers 5 and 4 show similar staining, it is probable that all kokowai covered flakes and artefacts are from one or other of these layers. The presence of kokowai is more pronounced on items from layer 5 than layer 4 but not sufficiently so to be of use diagnostically.

A number of obsidian pieces have pressure flaking along one or more edges but they have not been analysed for use wear or source.

Water-worn pumice was present throughout the site and several modified pieces were found. Some of these had cuts and grooves of various kinds over the surfaces, while other pieces had central depressions cut to form crudely shaped bowls. One use for pumice bowls and containers in New Zealand was for carrying live coals from one place to another for instant fire making but there is no evidence to suggest the rock shelter bowls had been used for this or any other purpose. They may have been discarded items while more successful ones were taken away. One complete, finished bowl was found in layer 5 (see below). An unusual piece of pumice, Artefact 85 (Fig. 7) also from layer 5 is spirally shaped. It is 140 mm long and 50 mm wide. Its purpose is not clear but it may have been some form of shaft polisher. Other pumice artefacts are discussed below.

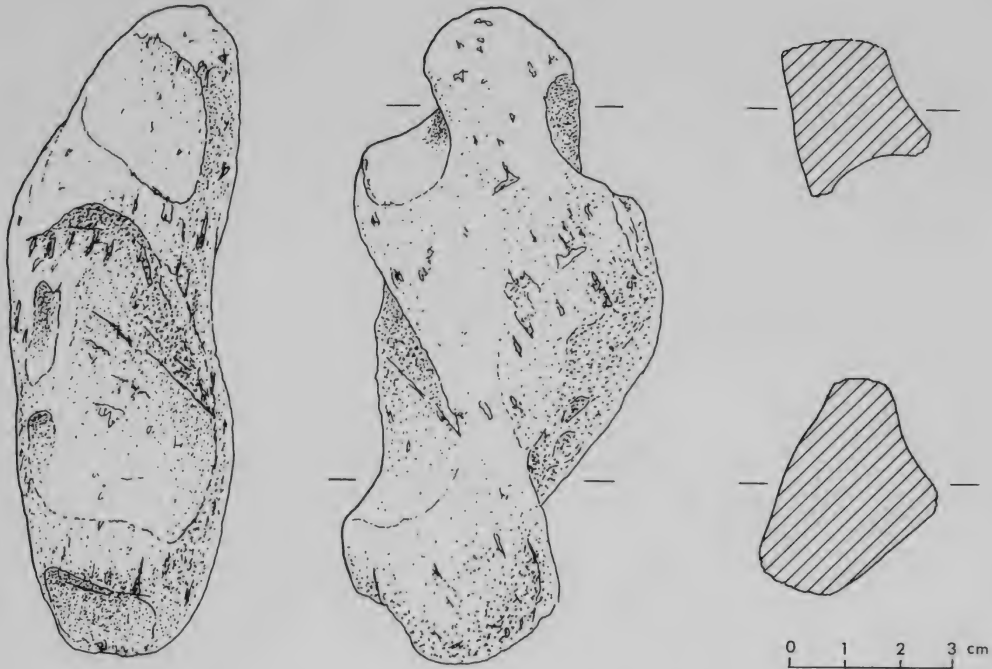


Fig. 7. Pumice artefact from layer 5.

ARTEFACTS

A number of complete or near complete artefacts came from the excavation.

Two bone toggles, Artefacts 94 and 95, are from layer 5, one found near the western recess and the other at the entrance to the central recess. The type of bone has not been identified but they are both cut from long bones. Artefact 94 is from a straight shaft section, measures 33 x 13 mm and has a hole bored through to the central cavity on one side. It is polished but not highly so. Artefact 95 is cut from a more curved piece of bone, wider at one end than the other and with the cord hole at the side but placed off centre. It is 30 mm long, 14 mm wide at one end and 10 mm at the other. This narrow end has a number of small decorative notches cut around the outer edge and the toggle is highly polished.

Bone Artefacts 91, 92 and 93 are unprovenanced although, from a rough sketch of the excavation, it is possible that Artefacts 92 and 93, at least, may have come from the deepest part of layer 4, i.e. *ca.* 15 cm from the surface. Artefact 91, already mentioned as possibly from a sub-adult dog long bone, measures 50 x 10 mm and at one end a deep notch has been cut. If it is from one of the dogs, it could have been made in the shelter and then left behind as no longer useful.

Artefact 92 is a narrow bird bone shaft, snapped at both ends, one of which has been smoothed to form a blunt point. Artefact 93, an awl, has been made from a larger bird long bone. The top has been sawn across and the lower portion broken leaving a sharp splinter which has been shaped to a fine smooth point. It has been extensively gnawed by

rats and on one side the teeth marks penetrate through to the central cavity. The awl measures 45 mm in length and is slightly shorter than Artefact 92. Both these items could have been made from bird bone remains in the shelter.

Three interesting pieces of worked pumice were excavated. Artefact 84 (Fig. 8), a pumice bowl, measuring 60 x 45 x 35 mm, came from layer 5 at the entrance to the eastern recess. Carved on one side is a double spiral. Although numerous pumice bowls in various stages of preparation were found throughout the rock shelter and Whakamoenga Cave layers, no other bowl as well finished or as elaborately decorated as this one occurred. Two pumice 'net floats', both measuring approximately 150 x 90 mm, came from unknown positions. They are similar to those found in Whakamoenga Cave except that one, A.R.6135, has a face carved on one surface (Fig. 9) and there is a cord impression encompassing the flattened sides. The other float, A.R. 6141A, has two holes bored through it and a cord line impression cutting across one side between the two holes, but the line ends before reaching the other side.

An unusually shaped item, Artefact 83 from layer 5, is a tubular, right-angled piece of soft stone with holes bored in each end. It closely resembles the upper portion of a small flute or *nguru* (Fig. 10). The bore holes are artificially made, as they taper inwards. The upper hole does not connect with the lower one which, because of incorrect angling of the drill, has penetrated the outer wall on one side. The back stop does not reach through to the upper bore hole and there is an incipient stop hole on one side below the penetrated outer wall. This position for a stop is unusual as they are generally placed on the upper part of the flute body. The base end has been broken off.

Two adzes were found. Artefact 78 (Fig. 11) came from layer 4, *ca.* 15 cm below the surface. It was situated at the back of the western recess in association with rat and bird bone. It is a 2B type, almost completely ground except at the butt end. The surface appears to have been partly hammer dressed before grinding. It is 130 mm long and 50 mm wide at the blade end and is rectangular in cross-section. The bevel has been ground

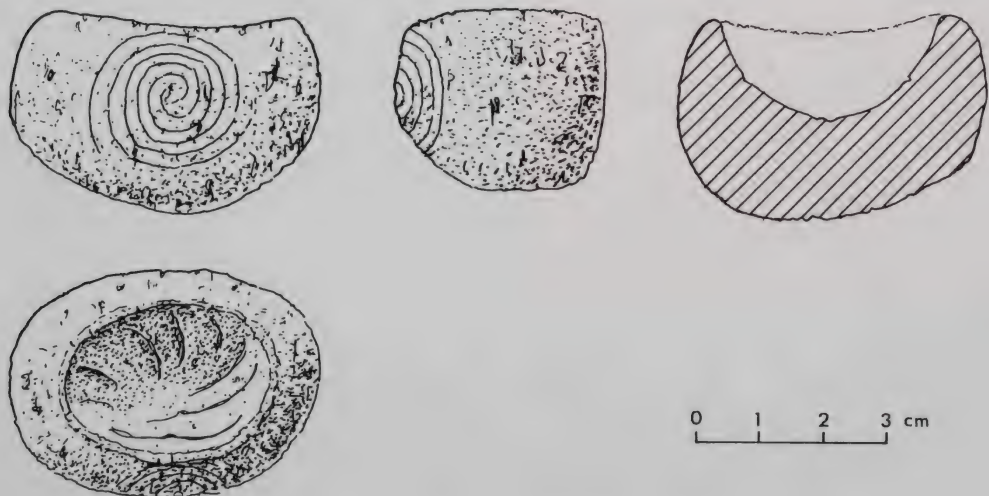
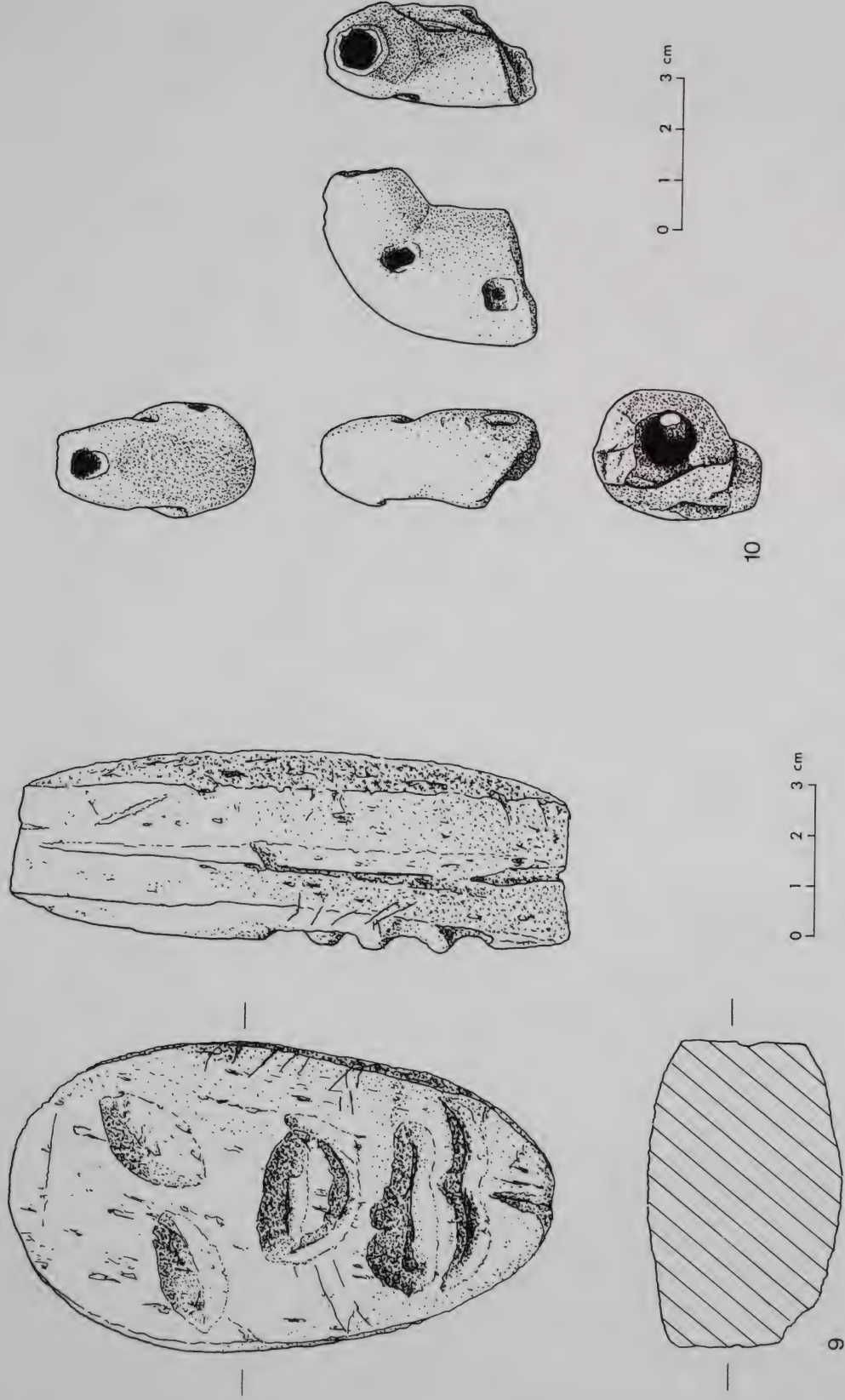
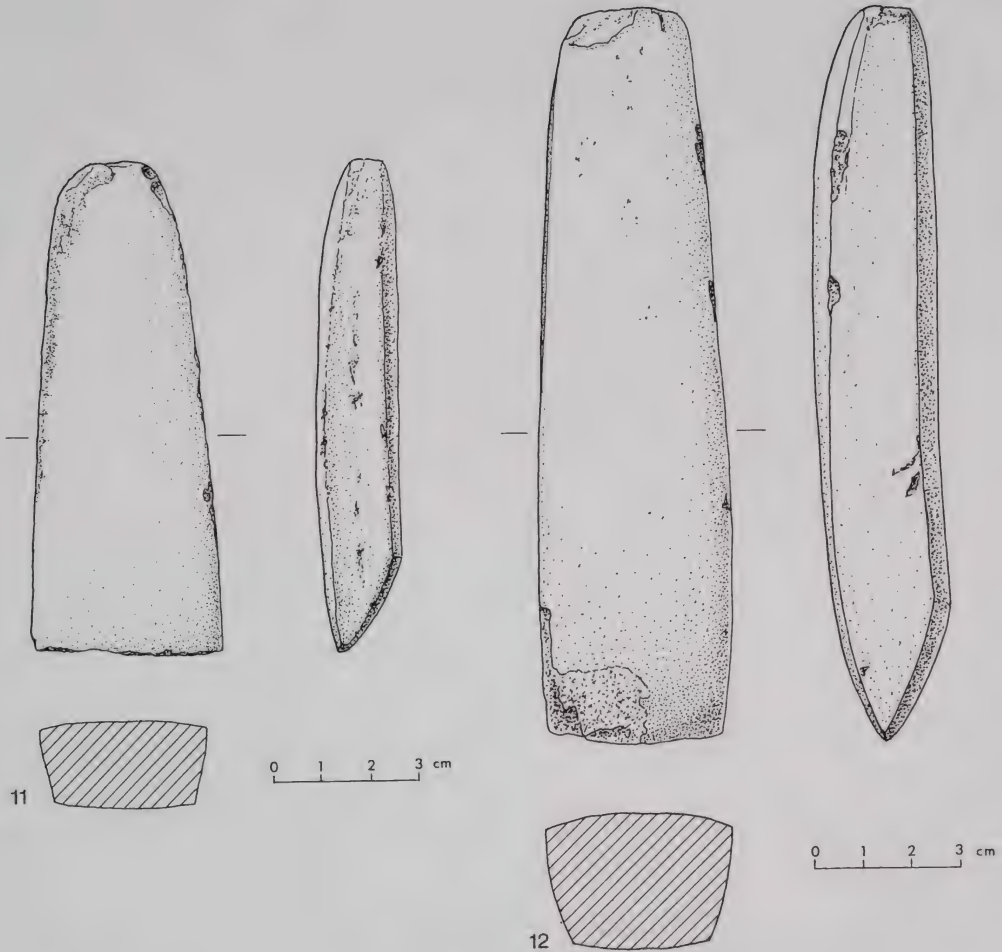


Fig. 8. Decorated pumice bowl from layer 5.



Figs. 9, 10. 9. Pumice artefact. 10. Broken stone artefact with artificially bored holes, possibly a small flute.



Figs. 11, 12. 11. Adze from layer 4. 12. Adze from layer 1.

but the blade end subsequently hammer-dressed and slightly reworked without re-grinding. There is a small chip out of the cutting edge and a few kokowai flecks on the surfaces.

Artefact 79 (Fig. 12) is a large adze found in the centre of the shelter at a depth of 30 cm in layer 1, associated with burnt wood ash and charcoal. It measures 195 x 55 mm and is a 2B type with a rectangular to squarish cross-section and a slightly curved longitudinal section. It is almost entirely ground except at the butt end. There is a chip out of the cutting edge on both sides of the bevel and it is possible that some attempt has been made to modify the damaged edge by hammer dressing on the front bevel surface. A small (85 x 20 mm) model pumice adze from the earliest occupation in Whakamoenga Cave is rather similar to Artefact 79 in that it is like a 2B, squarish in cross-section and slightly curved in longitudinal-section although 'stubbier' in appearance (Leahy 1976:64).

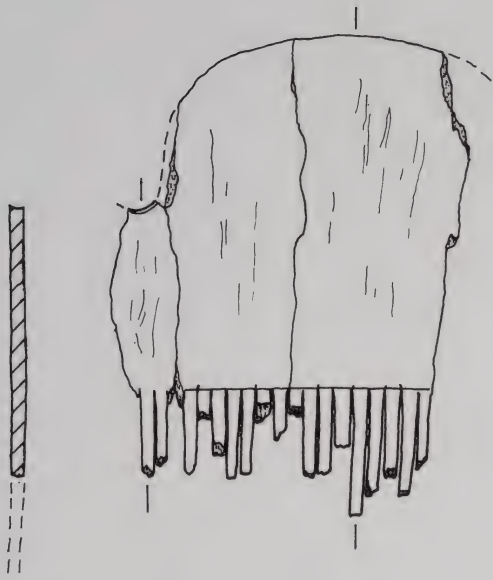
Three main types of hair combs occur in New Zealand, namely bone one piece (usually of whale bone), wooden one piece and composite wooden ones. Only two types are represented in the Waihora rock shelter. These are whale bone one piece and the composite wooden types. All came from the surface layer 5 and all were broken, probably deliberately, and left in the shelter.

The most complete of the two bone combs is A.R. 6125 (Fig. 13). It is broken into three parts down the grain and the teeth are snapped off *ca.* 20 mm below the frame base. A few squarish broken teeth from it were recovered. The curved frame top is undecorated and drops down on one side to what may have been a side notch or decoration, but both outer edges are missing. The remains of 18 teeth are present and there is a marked horizontal line dividing the base of the frame from the teeth. The teeth are squarish in cross-section and the interstices between them is very narrow. From this it might be inferred that some kind of fine European sawing tool may have been used to make the comb. However some teeth have uneven sides, indicating that they have been separated by cutting from both surfaces and this could have been done using obsidian. The comb is in a fragile condition.

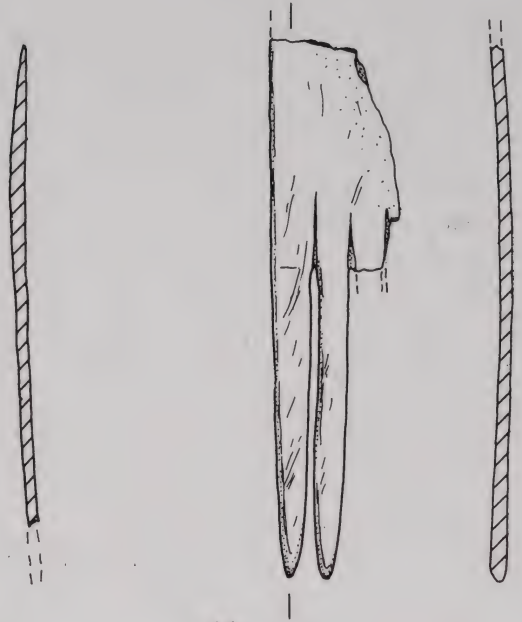
Comb A.R. 6126 (Fig. 14) is a piece of polished whale bone which has been broken across and down the frame. Part of the frame edge, two complete teeth and the base of a third, is all that remains. The teeth are 55 mm long, 6 mm wide and approximately 2 mm thick where they meet the frame. They thicken to 3 mm at their tips giving them a slightly globular appearance. The tooth interstices have narrow but clear gaps between them and the edges are smoothed round. There is no horizontal demarcation line between the teeth and the frame base. The comb is slightly stained with kokowai and is in better condition than A.R. 6125.

Little remains of the composite combs found. Composite combs consist of a number of long, thin, uniform slivers of wood bound or woven together across the upper portion with fine cord forming a frame from which the free teeth project. The two outer or framing teeth are more substantial in form, keeping the inner teeth rigid and acting as 'strainers' for the inner binding.

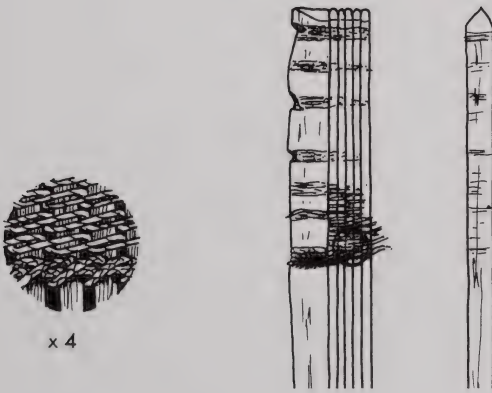
Composite comb A.R. 6123 (Fig. 15) is in a very fragile condition because of the distintegration of the cord binding. The comb consists of five teeth held in position against a larger framing tooth by very fine twisted cord. At intervals the cord extends out and crosses over and around the framing tooth. The binding is too damaged to establish the weaving pattern fully although the style is much less sophisticated than that on some other combs in collections studied. The framing tooth has been notched at regular intervals on its outer side to hold the inner teeth in place. There are also unnotched binding imprints showing around parts of the framing tooth and considerable red staining of the wood and cord suggesting it was once covered in kokowai or else worn in a head of hair impregnated with the substance. Fifteen loose inner teeth identical in length and shape to those attached to comb A.R. 6123 were found and are almost certain to be from this comb. The teeth measure 110 mm in length, taper from 5 mm in width near their tip to 4 mm at the frame end and are *ca.* 1.5 mm thick. The other framing tooth was not recovered.



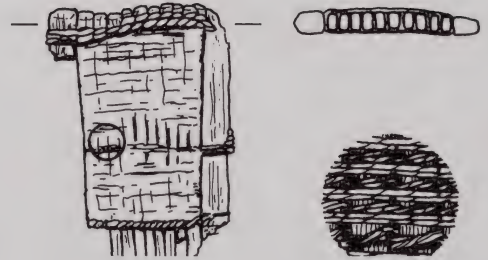
13



14



x 4



Figs. 13-16. 13. Broken bone comb, layer 5. 14. Broken bone comb, layer 5. 15. Remains of a composite wooden comb, layer 5. 16. Charred remains of composite wooden comb, layer 5.

Also in a very fragile condition is comb A.R. 6124 (Fig. 16). It has been charred and only the frame portion remains although the teeth may have been broken before burning. The inner teeth have been bound together, as shown in Fig. 16, and then bound to the framing teeth by a horizontal row of coarser cord, single pair twining at the top and half way down. The upper row of coarse cord appears to have been knotted on the back of the right framing tooth and the lower row on the back of the left one. The exact pattern is not clear as the lower portion of the right framing tooth is missing. The comb has ten inner teeth and two framing teeth. The frame measures 34 x 50 mm in its present charred state and is covered with kokowai.

Four separate kokowai stained teeth were also found. These are all the same size and design representing the remains of a third composite comb, the binding of which has disintegrated.

Few combs have been found in secure archaeological contexts, apart from those from the Kauri Point Swamp site, Bay of Plenty (Shawcross 1964, 1976). Teeth from a bone comb from layer 2 at Long Beach, Otago (Leach & Hamel 1981) are from a seventeenth century deposit. Wooden one piece combs were found at Kohika, Bay of Plenty (G. Irwin, pers.comm.) but no dating is available for these yet. Pieces of shaped bone, possibly representing parts of combs also occurred at Kaukoponui, Taranaki (R. Cassels, pers.comm.) and from the early but undated layer 5 at Hot Water Beach (Leahy 1974:43). Combs from less secure contexts are those from Redcliffs, Canterbury (Trotter 1975) and Oruarangi, Thames (Fisher 1934).

The three types are represented in the New Zealand comb collection from Cook's voyages indicating that they are all of pre-European origin (Kaepler 1978).

Although no one piece wooden combs were found in the rock shelter they are known ethnographically from the Lake Taupo area and examples of these are held in the Auckland Institute and Museum (Boucher Collection) and in the O'Kain's Museum, Banks Peninsula (M. Thacker, pers.comm.). The Taupo one piece wooden combs consist of a solid wooden frame with a number of inner teeth and two wider outer framing teeth, probably developed to strengthen and support the weaker inner ones and the whole comb generally. The combs from Kohika are similar to the Taupo ones. Both these differ from the Kauri Point swamp combs in that the swamp ones have no framing teeth, all the teeth being of approximately equal width. Green (1978: 39) suggests that the depositing of combs at Kauri Point commenced about 1500 A.D. and continued for about 200 years, ending before the eighteenth century. The wooden combs with framing teeth may be a regional variant on the Kauri Point type or a later development.

Combs are not known archaeologically nor ethnographically in other parts of Eastern Polynesia so that their origin in New Zealand is somewhat of a mystery. They are present in their composite wooden form in ethnographical collections from Western Polynesia but there are few indications of Western Polynesian influence in pre-European New Zealand. It therefore seems likely, from the evidence to date, that hair combs were an indigenous development.

It is not known when the use of combs finally died out although it has been suggested that missionary influence and the European fashion of short hair for men from about 1815

onwards caused this cultural tradition to cease. It probably happened at different times in various parts of New Zealand.

It seems likely from the comb evidence that the rock shelter was last occupied at some time before the late 1820's and, as there is no evidence for the presence of European artefacts, use of the shelter could have ceased at a considerably earlier period.

CONCLUSION

The remains from the rock shelter at Waihora Bay suggests periodic visits by small groups of people over an unknown period of time.

There are many general similarities between the rock shelter and the larger Whakamoenga Cave further east. The Waihora evidence most closely resembles that from occupation 2 at Whakamoenga, suggesting that the shelter was probably in use from the seventeenth to the late eighteenth century. It was abandoned in pre-European or possibly early European times. Cultural material from the rock shelter is much more restricted than that from Whakamoenga but from the excavated evidence, though much of it was unprovenanced, certain inferences about the activities of the occupants can be made.

Of the vegetable material found, the use of gourds both as food and as containers is indicated. Fern root was prepared and eaten and bracken and flax used in the preparation of artefacts of unknown use. Raw flax was worked in two different weaves to form mats. These were probably for use in a hangi as the pieces were burnt but they could have been the remains of sleeping or wrapping mats. At one period a fire stick was used to light fires.

A limited range of birds was carried in as food, amongst them ducks and a takahe. As in occupation 2 at Whakamoenga, little bone material from bush birds was identified in the shelter suggesting that, by the seventeenth century, most of the surrounding bush had been destroyed by fire (see Leahy 1976:32-33; 68). Some of the bird bones may have been formed into awls or points, used and subsequently discarded. Three sub-adult dogs were killed and consumed during the layer 4 occupation. Attempts at working some of the dog long bones occurred and one artefact of unknown use was found. As not all the long bones are accounted for it may be that some dog haunches or the bones were taken away for use elsewhere (see Smith, 1981). Other food items may have included a tuatara, a gecko, native rats and freshwater mussels.

The possible presence of a piece of worked green or semi-fossil moa bone is interesting as it would indicate that the shelter was occupied at a time when men still had a knowledge of the use of moa bone. If so, it is likely that the piece could have come from layer 1.

Access to the shelter would have been easier by canoe than by land and the remains of what appear to be paddles suggest this. Much of the stone was brought in, most likely by canoe, and flaked on the spot as required or used as hangi stones. Some of the obsidian had the cortex removed, possibly to form more manageable pieces for transportation elsewhere.

The presence of two finished adzes and the flake from a third indicated that wood working was one of the activities of the occupants. The small block of wood may well have been prepared for some piece of equipment but finally discarded. The fact that two adzes were left behind at different periods suggests that these items were expendable, easily replaced or left in the shelter for an anticipated future visit.

Pumice was extensively used in the Taupo area and, as has been suggested for Whakamoenga Cave, prepared pieces may have been manufactured and exported. The two net floats in the shelter closely parallel some from Whakamoenga and were probably used with nets for catching the native kokopu (*Galaxias brevipinnis*) and their juveniles or 'whitebait' in the Taupo streams and lake. There are no eels in the lake. Other uses for these floats could have been as buoys for marking the position of fresh water crayfish (*Paraneohpops planifrons*) traps or other objects in the water. The face on one of the floats suggests magico-religious functions associated with the fishing process or its use as a *rahui* marker.

Pumice bowls, both partially formed and completed were present in the shelter. Well prepared ones, perhaps for carrying live coals in, were taken away and the rejects left behind. The complete, finely decorated bowl from layer 5 appears to be unique for the region.

The presence of the broken flute is hard to account for. It was not finished because of a fault in manufacture and was subsequently broken. Its presence, however, does indicate that such items were in use in the area and were part of the cultural and ceremonial activities of the Taupo tribes.

The fine woven cloak remains, along with other items in layer 5, may indicate that the body of a person of importance had been placed in the shelter.

Increasing activities and population growth around the lake occurred after the deposit of sterile layer 2 in the shelter as there is little evidence for an extensive time break between layers 3, 4 and 5 compared to that indicated between layers 1 and 3.

Occupations 1, 3 and 4 suggest the use of the shelter as a place for temporary habitation rather than for any specialized function. This changes during the last occupation when it probably became a place for the exposure of bodies and the deposition of associated personal objects, the bodies being later removed and the shelter abandoned before the arrival of European artefacts or influence.

Despite interpretative problems arising from lack of strict excavation control the material from the rock shelter at Waihora is of considerable interest to the prehistory of the Lake Taupo area generally and of particular significance in relation to the Whakamoenga Cave results.

Acknowledgements. Professor R.C. Green first drew our attention to the distribution anomaly of hair combs in Eastern and Western Polynesia and we are indebted to him for further helpful discussions. Janet Davidson read the manuscript and her constructive comments and encouragement over a long period of preparation was much appreciated. We would also like to thank R.J. Scarlett, Canterbury Museum, for his work in identifying the bone material and J. Goulding, Auckland Institute and Museum for the botanical and fibre identification. Mr D.R. Simmons kindly assisted with the use of material in the Auckland Museum.

REFERENCES

- FALLA, R.A., R.B. SIBSON and E.G. TURBOTT
1979 *The New Guide to Birds of New Zealand*. Collins, Auckland and London.
- FISHER, V.
1934 The Material Culture of Oruarangi, Matatoki, Thames. *Rec. Auckland Inst. Mus.* 1:275-286.
- GREEN, R.C.
1978 Dating the Kauri Point Sequence. *Historical Review* 26 (1). Journal of the Whakatane Historical Society.
- HARSANT, W.J.
1978 Unmodified shell tools: Their use in Prehistoric New Zealand. Unpublished Research Essay, Department of Anthropology, Auckland University.
- KAEPLER, A.
1978 Artificial Curiosities. *Bernice P. Bishop Mus. Spec. Pub.* 65: 178-181.
- LEACH, H.M., and J. HAMEL
1981 Archaic and Classical Maori Relationships at Long Beach, Otago. *N.Z.J. Archaeol.* 3: 109-141.
- LEAHY, A.
1974 Excavations at Hot Water Beach (N44/69), Coromandel Peninsula. *Rec. Auckland Inst. Mus.* 11: 23-76
1976 Whakamoenga Cave, Taupo, N94/7. A report on the ecology, economy and stratigraphy. *Rec. Auckland Inst. Mus.* 13: 29-75.
- MEAD, S.M.
1969 *Traditional Maori Clothing*. Read, Wellington. 238p.
- SHAWCROSS, W.
1964 An Archaeological Assemblage of Maori Combs. *J. Polynes. Soc.* 73 (3): 382-398.
1976 Kauri Point Swamp: the ethnographic interpretation of a prehistoric site. In Sieveking G. de G., Longworth I.H. and Wilson K.W. (Eds), *Problems in Economic and Social Archaeology* Duckworth, London. pp. 277-305.
- SMITH, I.W.G.
1981 Mammalian Fauna from an Archaic Site on Motutapu Island. *Rec. Auckland Inst. Mus.* 18: 95-105.
- TROTTER, M.M.
1975 Archaeological Investigations at Redcliffs, Canterbury, New Zealand. *Rec. Canterbury Mus.* 9 (3): 189-220.